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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Section 2.106 of	)	ET Docket No. 93-59
the Commission's Rules to	)	RM-8092
Allocate Spectrum for	)	
Wind Profiler Radar Systems	)	

COMMENTS OF NORTH AMERICAN TELETRAC AND LOCATION TECHNOLOGIES

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Dated: June 15, 1993

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TO: The Commission

COMMENTS OF NORTH AMERICAN TELETRAC AND LOCATION TECHNOLOGIES

North American Teletrac and Location Technologies, Inc. through their joint venture, PacTel Teletrac ("Teletrac") believes the Commission should defer any consideration of whether wind profiler technology should be licensed in the 902-928 MHz band until the rules governing automated vehicle monitoring services (AVM) have been finalized in PR Docket No. 93-61. The record leading to this Notice of Inquiry (NOI)[1] raises significant issues as to whether portable wind profiler radar systems (wind profilers) operating at 908.75 to 921.25 MHz will interfere with existing AVM providers and make it more difficult to shift narrowband automated vehicle identification systems (AVI) to 912-918 MHz under the Commission's proposal in PR Docket 93-61. The Commission has already recognized the close connection between this proceeding and PR Docket 93-61 by noting

[1] Teletrac takes no position on the issues raised in the Notice of Proposed Rulemaking to allocate 448-450 MHz for wind profilers on a co-primary basis, but limits its comments to the NOI portion of the Commission's Notice.

in the NPRM for 93-61 that "[a]ny Commission action in response to RM-8092 will take into consideration spectrum and licensing requirements that will be adopted in this proceeding."[2]

Since no apparent commercial need for wind profiler service has yet been demonstrated, and there is significant potential for harm, deferral is appropriate until the permanent regulatory landscape is in place.

STATEMENT OF INTEREST

Teletrac's interest in this proceeding is significant. Teltrac is currently providing licensed wideband pulse-ranging AVM services, using the 904-912 MHz band and a forward link at 925.015 MHz, on a commercial basis in six cities: Chicago, Dallas-Ft. Worth, Detroit, Houston, Los Angeles and Miami. Teletrac has licenses and plans to construct additional systems in other parts of the country once permanent AVM rules are adopted in PR Docket No. 93-61. Radian Corporation (Radian) has proposed to operate its wind profiler service throughout the 908.75 MHz to 921.25 MHz band, which will place Radian's wind profiler service directly in the band in which Teletrac operates. Radian concedes it cannot now show that its wind profiler will not cause harmful interference to Teltrac systems. (Radian Petition at 7, n.22)

The Commission's Notice of Inquiry (NOI) sought comment on this very point:

> We agree with the commenting parties that there is insufficient information in our record regarding the

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[2] Notice of Proposed Rulemaking, Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic 16 Vehicle Monitoring Systems, PR Docket 93-61, RM 8013 ¶ 15 n.33.

> potential impact of the allocation for wind profilers in the 902-928 MHz band in the current uses of this band. We also believe it is necessary to explore the implications of a wind profiler allocation on the proposed AVM uses and the necessary bandwidth for the wind profilers that would operate in this band.

(NOI ¶ 19.)

Teletrac respectfully submits that this issue cannot be accurately addressed and determined until the issues in PR Docket 93-61 have been finally resolved.

DISCUSSION

Radian originally proposed that non-Government wind profilers be granted secondary status at 914-916 MHz. However, after reviewing comments on its Petition, Radian discovered it needed 12.5 MHz rather than 2 MHz, the entire spectrum from 908.75-921.25 MHz. (NOI ¶ 5.) According to Radian, a permanent allocation is needed because wind profilers operating in the 900 MHz band would be capable of finer resolution measurements at low altitudes than 400 MHz profilers can provide. Accordingly, the Commission has issued the NOI to solicit comment regarding all aspects of the need for, and implications of, an allocation of spectrum within the 902-928 MHz band for wind profilers. (NOI ¶ 19.)

A. Nothing In the Record Suggests A Need for the Service Radian Proposes in the 900 Band

Radian describes itself as a scientific research and consulting firm (Radian Petition at 1) that developed portable wind profiler equipment in conjunction with the National Oceanic and Atmospheric Administration (NOAA). Radian has received experimental licenses at eleven locations in the United States (Petition at 1-2). It is unclear whether Radian intends to

market the equipment it has developed with Government funds, or to offer some kind of wind monitoring service.

Unlike most petitions for rulemaking that support new technologies or services, the Radian petition was not supported by any customers claiming to need the equipment or service. It did not even describe who the specific users are likely to be. Moreover, information submitted by Radian suggests that its system might not operate properly in rain.[3] Even the Federal Government's request for a Stage 3 frequency assignment for wind profilers in the 890-942 MHz band seems to prefer frequencies below 400 MHz.[4]

Finally, we note that the Federal Government seems to have limited its assessment of wind profiler spectrum needs to frequencies around 220, 400 and 420 MHz. The record does not appear to contain any finding by the Federal Government that wind profilers are needed around 915 MHz.[5]

B. The Radian Technology Raises The Issue of Interference With Licensees Operating In The 902-928 MHz Band

Radian admits in its petition that it has no idea whether AVM services would interfere with wind profilers, (Radian Petition at 7, n.22) and conversely claims, without support, that

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[3] "Systems operating above 400 MHz are sensitive to rain, which at times may contaminate the wind measurements." Vern Peterson, "Wind Profiling" Appendix A to Radian Petition, at 8.

[4] "Temperature profiling... has a greater height range if the wind profiler operates at frequencies lower than 400 MHz." Attachment to Memorandum of May 29, 1992 from Richard Barth to Arthur H. Gray, Appendix C to Reply Comments and Amended Petition for Rulemaking of Radian Corp, Dec. 17, 1992, at 2.

[5] Nor does it contain any analysis of 915 MHz wind profiler interference to or from Government stations in the band.

there have been no reports of interference by experimental wind profilers with other users (Radian Reply Comments at 7-10).[6] It is not sufficient to claim that no interference has been experienced by AVM systems. Radian's operations under its experimental licenses have been very limited in scope. Radian's Reply Comments make clear that it is planning to use its service in urban areas (Petition at 4) where wideband pulse-ranging systems, such as Teletrac, are presently offering commercial service to a wide variety of users. Accordingly, there is nothing in this record that could lead to the conclusion that there will be no substantial interference. Indeed, since these wind profilers are portable they can be easily repositioned and potentials for interference must be carefully examined.

The record to date suggests that potentials for interference may be significant. AMTECH Corporation, a narrowband system that would be moved to 902-904, 912-918, and/or 926-928 MHz under the Commission's proposed rules in PR Docket 93-61, has raised that very issue. As the Commission will recall, AMTECH has spent a significant amount of time attacking Teletrac's regulatory proposals in PR Docket 93-61 on the ground

profiler system.

> [I]t appears from the petition that Radian would also like to sell its product for use in areas more densely populated with radio users, such as in the vicinity of airports. Such operation could pose a threat to an increasing number of AMTECH AVM systems located at airports, including systems in Los Angeles and New York. . . . Even in more rural areas, wind profiler operations could interfere with other uses of the band.
>
> -- Comments of AMTECH Corporation at 9. (Emphasis supplied.)

See also Reply Comments of Hughes Aircraft Company at 4-5.

Moreover, Radian has presented no analysis of the impact of its wind profilers on the operations of wideband pulse-ranging systems such as Teletrac. Until adequate interference analysis is supplied, the Commission is unable to determine the extent of interference that may result. In the alternative, we note that the Radian wind profilers appear to operate with several bandwidths, corresponding to several pulse widths. The necessary bandwidth for all the pulse widths are:

400 nsec pulse	12.5 MHz
700 nsec pulse	5.6 MHz
1400 nsec pulse	illegible
2800 nsec pulse	4.5 MHz[7]

Thus, Radian systems are able to operate with at least three different pulse widths that require less than 6 MHz bandwidth, and with these pulse widths there would be no need for these systems to transmit in the 904-912 MHz and 918-926 MHz bands. It would be prudent spectrum management policy to permit only those pulse widths to be used, so that only bandwidths less than 6 MHz

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[7] Memorandum from Jim Jordan to Richard Barth, Nov. 25, 1992, Appendix C to Reply Comments and Amended Petition for Rulemaking of Radian Corp, Dec. 17, 1992, at 1.

would be allowed. In that case, no further interference analysis into wideband pulse ranging AVM systems would be needed.

One way to assess the interference potential of the Radian wind profilers into wideband pulse-ranging AVM systems is to test them in the field. Radian's units are apparently transportable, and could be moved to any of the cities where Teletrac is now operating. If Radian insists on the need for 12 MHz bandwidth, then Teletrac would be willing to work jointly with Radian technicians to test for interference under commercial standards.

C. More Detailed Technical Standards Are Needed

Issues such as technical standards, permissible use, eligibility and other licensing matters will have to be addressed before Radian's wind profiler service could begin operating. Consequently, we recognize that the following comments are premature, but we offer them in the interest of compiling a more complete record.

We believe that Radian's proposed technical standards are insufficient to prevent interference to AVM operations. Radian has proposed specifications for frequency tolerance, peak output power, antenna gain in the horizontal direction, and side lobe suppression in the horizontal direction. It has not proposed any specification for duty cycle or an emission mask.

We note that Radian's Engineering Statement is based on a peak output power of 500 watts, and a 15% duty cycle.[8] Consequently, the technical rules should include a limit on duty

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[8] Engineering Statement of John Neuschaefer, ¶ 9.

cycle as well as peak output power.

The wind profiler antenna pattern should be defined in a manner consistent with Section 94.75, specifying off-axis suppression limits at a variety of angles. It is not sufficient simply to specify a horizontal gain limit of 30 dBi[9] and horizontal sidelobe suppression limit. Teletrac receivers are likely to be located on roof tops and on existing antenna towers, which may be at elevations of 30 degrees or even 45 degrees above the horizontal from the Radian transmitter. A limit only in the horizontal direction is not adequate to protect against interference.

Finally, we suggest that an emission mask is needed to assure that Radian transmissions do not cause adjacent channel interference to licensees operating on adjacent frequencies. Such an emission mask will help to minimize adjacent channel interference into these AVM systems.

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[9] Radian does not explain its basis for this proposed specification, and it appears to contain an error; we believe it should either be -30 dBi in the horizontal direction or +30 dBi in the vertical direction.

CONCLUSION

For the reasons stated above, the Commission should defer consideration of wind profiler licensing in the 908.75 to 921.25 MHz band on a secondary basis until final AVM rules have been adopted, and there has been a sufficient record developed regarding interference to assure that wind profilers will not interfere with AVM systems.

Respectfully submitted,

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Dated: June 15, 1993

CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of June, 1993, a copy of the foregoing COMMENTS OF NORTH AMERICAN TELETRAC AND LOCATION TECHNOLOGIES, INC. was served by first class United States mail, postage prepaid on the following parties:

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